

What is claimed is:

1. An electrical transducer using a two-wire process comprising:
 - a sensor that detects a quantity to be measured;
 - an analog end stage which is connected downstream of the sensor;
 - a processor circuit; and
 - an analog measurement signal transmission path, the analog end stage converting an output signal of the sensor into an impressed output current with a magnitude which is a measure of the quantity to be measured, the electronic transducer capable of being controlled with the processor circuit, wherein during normal operation of the electrical transducer, the processor circuit is shifted temporarily into a sleep mode, the analog measurement signal transmission path and an analog scaling unit are inserted, the output signal of the sensor and at least one analog setting value are supplied to the analog scaling unit, and the output signal of the analog scaling unit supplied to the analog end stage.
2. The electrical transducer of claim 1, wherein the analog scaling unit is an analog arithmetic circuit to which as the analog setting value, a DC voltage signal or a direct current signal is delivered.
3. The electrical transducer of claim 2, wherein there is at least one of at least one active integrator as the actuator for the at least one DC voltage signal or, at least one direct current signal and the active integrator is connected to the processor circuit and to the scaling unit.

4. The electrical transducer of claim 3, wherein the active integrators are a component of a control circuit within the processor circuit.

5. The electrical transducer of claim 2, wherein the analog arithmetic circuit comprises at least one analog multiplier.

6. The electrical transducer of claim 5, wherein the analog multiplier is a single quadrant multiplier.

7. The electrical transducer of claim 5, wherein the analog arithmetic circuit further comprises at least one of at least one subtractor and at least one adder.

8. The electrical transducer of claim 5, wherein the analog arithmetic circuit comprises a plurality of transistors and a plurality of operational amplifiers.

9. The electrical transducer of claim 1, further comprising a power source that produces a non-zero output current.

10. The electrical transducer of claim 6, wherein an adder is connected to the input of the single quadrant multiplier, and a subtractor and an adder are connected to the output of the single quadrant amplifier.

11. The electrical transducer of claim 1, further comprising an attenuator, capable of having an adjustable time constant, is connected between the analog scaling unit and the analog end stage.

12. The electrical transducer of claim 11, wherein the attenuator comprises at least one different RC element which can be selectively connected via the processor circuit.

13. The electrical transducer of claim 11, wherein an analog error at the output of the attenuator can be compensated by a control circuit.

14. The electrical transducer of claim 1, further comprising a third power supply terminal, the third power supply terminal connected to a detector means so that when a certain power supply voltage is applied to the third power supply terminal, the transducer automatically switches to three-wire operation.

15. The electrical transducer of claim 14, wherein the detector means is connected to the processor circuit, and the processor circuit shifts permanently into the awake mode during three-wire operation.

16. A method of producing an indication of a measured value with an electrical transducer via an output current which is proportional to the measured value, the transducer comprising a sensor, an electronic circuit which is connected downstream of the sensor, and a processor circuit, the electronic circuit converting an output signal of the sensor into an impressed output current with a level corresponding to the measured value, the electrical transducer capable of being programmed using the processor circuit, wherein during normal operation of the transducer, the processor circuit is shifted temporarily into a sleep mode, the output signal of the sensor is supplied to an analog scaling unit, at least one analog setting value is supplied to the analog scaling unit, and the output signal of the analog scaling unit is supplied to the electronic circuit.